



## **IPHE Country Update Nov 2023 – Feb 2024: Chile**

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### **1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells**

On 22 December 2023, following an intense participatory process, the Chilean Energy Ministry has published **its draft 2023-2030 green hydrogen action plan**: documento-h2v\_0.pdf (energia.gob.cl). This action plan identifies 30 critical measures to promote a sustainable green hydrogen industry, looking at how to:

- (1) Strengthen the (state) services that provide critical permits for the proper development of the industry and establish an implementation path with a focus on the regions.
- (2) Accelerate the implementation of a plan of enabling regulations for the industry.
- (5) Promote the comprehensive reform of sectoral permits.
- (6) Implement during 2024 the financial facility instrument to catalyse investments and support industry projects qualified as first movers.
- (7) Design tax and development incentives to support the early establishment of the industry.
- (9) To make fiscal land available for the development of industry, promoting its sustainable development.
- (11) Implement practical teaching modules on green hydrogen in technical-vocational high schools in different regions of the country.
- (12) Implement the "train the trainers" program to train trainers and/or teachers in the latest advances in the industry, both technical and university, in the regions.
- (15) Implement a pilot hydrogen public transport bus, to bring this energy source closer to the citizens, before 2025.
- (17) Implement actions to develop green maritime corridors to materialize the first green maritime trade route in Latin America before 2030.
- (20) Develop plans and actions to promote shared infrastructure in the different parts of the industry's value chain through coordination between different public and private actors, prioritizing:
  - a. ENAP and Empresa Portuaria Austral infrastructure investment plans.
  - b. Management of fiscal land for shared infrastructure.
- Etc...

On top of this, **111 measures divided into 8 lines of actions** have been identified with a clear objective, a timeframe and the responsible ministry to carry out that measure.



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These 8 lines of actions are:

1. Market Enabling
2. Enabling Infrastructure
3. Participation, Information and Education
4. Permit System
5. Industry Sustainability
6. Territorial Deployment
7. Development of Capacities, Knowledge and Skills
8. International Positioning

Following a **public consultation** process where citizens were able to make observations and comments, the final version of the Action Plan will be issued and will be presented to the country in May 2024.

### 2. Hydrogen and Fuel Cell R&D Update

Provide R&D progress against plans since the last member update. For example, information on cost reductions and enhanced performance of FCH technologies. Please report demonstration and deployment activities separately in the following section.

In February 2024, CORFO, the Chilean economic development agency, published its 2024 call for tenders that are or will be available in the Green Hydrogen value chain and its derivatives. It encompasses many different elements from high tech innovation to H2 demand subsidy as well as a RFP for manufacturing of electrolyzers in Chile.

In November 2023, CORFO, the Chilean economic development agency opened a call for tender for "Technological Program for the use and adoption of hydrogen in Chilean industry" through the development of projects that solve one of two challenges. The first, energy transformation to hydrogen in local industries with high CO2 emissions, which involves incorporation or adaptation of industrial processes and applications that use hydrogen as fuel or energy vector. The second seeks to promote the application of hydrogen in the elaboration of local manufactured products, with the objective of massifying the local demand for green hydrogen in productive processes. CORFO's is financing projects for up to USD 3.5 million.

### 3. Demonstration, Deployments, and Workforce Developments Update

Provide information on the progress of current demonstration projects and any newly introduced demonstration projects since the last country update. Please highlight any deployment decisions made by stakeholders. Also, identify any workforce developments including training and educations initiatives for the workforce, and employment numbers.

In December 2023, a public-private cooperation protocol aimed at boosting the green hydrogen and hydrogen derivatives industry in the Magallanes region was signed



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between Chilean Authorities of which the President of the Republic of Chile, Gabriel Boric and the H2V Magallanes trade association representing the private sector.

The agreement, which is intended to be "ambitious and realistic", focuses on five areas of work: 1) human capacity, 2) the productive ecosystem (i.e. local content), 3) technological innovation, 4) shared infrastructure and 5) the harmonious development of the region.

In November 2023, Highly Innovative Fuels Global (HIF global) announced the first commercial export of carbon-neutral fuel. HIF global is an international electrofuels company founded in 2016 by Chilean-Peruvian company AME and backed by German carmaker Porsche AG. 24,600 liters of synthetic gasoline produced at the Haru Oni plant in the far south of Chile left Puerto Mardones for the port of San Antonio (near Valparaiso) to tranship and continue its journey to the UK.

The fuel was used in Porsche mobile's experience centers, without the need to modify the engines. The Haru Oni plant is the world's first fully integrated facility for the manufacture of carbon-neutral synthetic fuels (e-fuel/ e-methanol). The plant uses renewable wind energy and electrolysis to produce green hydrogen.

In October 2023, Anglo-American, a mining company, presented the first intercity bus powered by hydrogen in the Chile. The arrival of this emission-free vehicle that has a capacity for 50 passengers and a maximum range of 300 kilometres and is equipped with a 120 kW hydrogen fuel cell is the result of a collaborative work that have been developing different companies: Anglo American, Andes Motor, Buses Hualpén, Copec Voltex and Linde. Although in the first instance this bus will not operate with green hydrogen the objective of the introduction of this first hydrogen bus in the country is to demonstrate the reliability of this new technology in an area such as transportation.

In August 2023, the supermarket chain Walmart Chile inaugurated in the country's capital the first industrial green hydrogen plant in the region. The initiative was developed together with the Energy generating company Engie and considered an investment of approximately USD\$ 15 million. Its objective is to charge the batteries of 200 forklift cranes, replacing those currently used with hydrogen energy cells. Thanks to this replacement, the retail chain will avoid the generation of 250 tons of toxic waste per year. Thus, in the same period it will also reduce the emission of 1,140 tons of CO<sub>2</sub> into the atmosphere.

In August 2023, thanks to a strategic alliance between the Centro Nacional de Pilotaje (CNP) and Minera San Pedro, a project was awarded the first Green Hydrogen Accelerator from the Chilean Energy Efficiency Agency and the Ministry of Energy. With three operational electrolyzers, the pilot plant has a daily production of 1 kg H<sub>2</sub>/day and the potential to produce up to 3 kg H<sub>2</sub>/day in continuous operation. This hydrogen will be stored in a buffer tank with a capacity of 850 liters and a pressure of 35 bar. It is noteworthy to mention that the energy for this operation comes from 22 solar panels located on the roof of the facility.

In May 2023, in the town of Mejillones, the Scientific and Technological Center of the Antofagasta Region (Cicitem) was able to generate the first kilograms of green hydrogen through its Mobile Pilot Plant. This unit, a pioneer in the world and inaugurated in October 2022, corresponds to a project financed by the Innovation Fund for Competitiveness (FIC-R) of the regional government. The Mobile Pilot Plant aims to study the potential for hydrogen production by electrolysis of water from solar photovoltaic energy.



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### 4. Events and Solicitations

- Provide information on upcoming hydrogen-related events that will include international participants. Also, please provide any information regarding solicitations<sup>1</sup> that can lead to collaboration among IPHE members.
- Hyvolution Chile will take place between 3-5 September 2024 with the purpose of gathering in one place the local ecosystem with national and international actors for the promotion, marketing, relationship and its strengthening, in all its value chain, which includes the production, storage, distribution, uses, technologies, technical and financial services, among others.
- The energy ministry and the German cooperation agency GIZ will organise a Hydrogen summit in the town of Concepción in October 2024.

### 5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

Provide recent government, and, government with industry collaborative funding for hydrogen and fuel cell R&D, Demonstrations, Deployments and Infrastructure (in domestic currency and U.S. dollars). Please only include government funding for activities directly related to hydrogen and fuel cells.

In July 2023, the Chilean government appointed CORFO, the Chilean Production Development Corporation, to coordinate and implement several green hydrogen projects. A USD 1 billion mixed financing fund (financed by the World Bank, the Inter-American Development Bank, the EU and Germany's KfW) has been set up to create risk mitigation instruments and improve financing conditions. The so called “Green Hydrogen Facility” will support a green, resilient and inclusive economic development project will primarily benefit local communities where clean hydrogen will be produced and used, and help create green jobs, stimulate the economy, and decarbonize local industries. Additionally, technical assistance will be provided to promote the development of this industry.

Part of this USD 1 billion fund, the World Bank Board of Directors approved a US\$150 million loan to promote investment in green hydrogen projects in Chile, accelerating the country's green growth, energy transition and supporting its commitment to carbon neutrality by 2050. This is the World Bank's first loan to promote green hydrogen to support climate change mitigation efforts.

### 6. Regulations, Codes & Standards, and Safety Update

Provide an update on any national or regional developments related to Regulations, Codes & Standards

Chile is about to launch to public consultation (March-April 2024) an inter-ministerial regulatory work plan that will account for the creation or modification of our current

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<sup>1</sup> Can include *Requests for Information* and *Calls for Proposals* and other requests that may or may not involve funding support but looks to address issues that may be of interest to IPHE members



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regulations incorporating hydrogen as a fuel. This work is based on a study carried out by the ministry in 2021, which provided the standards associated with each point of the hydrogen value chain. After that we developed a joint work with the Ministry of Economy to have the commitment of ministries with competence in the matter such as mining and transport to develop this work in time and with the necessary resources for this development. So far we have built the safety regulations for facilities based on the NFPA2 code, which is in its final stage, and this year we will create the hydrogen quality specifications regulation and the refuelling stations regulation, both with previous studies that show indications of the steps to follow.

In parallel, we will launch the second version of the guide for special projects in the superintendence of electricity and fuels where projects can be executed under international reference standards despite not yet having the regulation, this has generated that the projects that are known and are under development can be built under an appropriate safety standard without having to wait for the creation of the regulation.